Inventors.

Considered 01/06/05 MEC

L12 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:539935 HCAPLUS
DOCUMENT NUMBER: 137:90548
ENTRY DATE: Entered STN: 19 Jul 2002
TITLE: Polymer brushes for immobilizing molecules to a surface or substrate having improved stability
INVENTOR(S): **Klaerner, Gerrit; Benoit, Didier; Charmot, Dominique; Nomula, Srinivas ; Piotti, Marcelo E.; Mazzola, Laura T.**
PATENT ASSIGNEE(S): Symyx Technologies, Inc., USA
SOURCE: PCT Int. Appl., 162 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
INT. PATENT CLASSIF.:
MAIN: G01N033-543
SECONDARY: G01N033-545; C08J007-16; C08F293-00; C08F220-00
CLASSIFICATION: 9-1 (Biochemical Methods)
Section cross-reference(s): 35
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002056021	A2	20020718	WO 2002-US746	20020110
WO 2002056021	A3	20030918		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2003108879	A1	20030612	US 2002-43394	20020110
PRIORITY APPLN. INFO.:			US 2001-271692P	P 20010110

this application

PATENT CLASSIFICATION CODES:

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2002056021	ICM	G01N033-543
	ICS	G01N033-545; C08J007-16; C08F293-00; C08F220-00

ABSTRACT:
The invention concerns sensors for determining the presence and concentration of bio-mols.
in a biol. sample in the form of polymer brushes, which comprise a substrate having a surface modified with a hydrophobic polymer segment, attached to which is a water-dispersible or water-soluble polymer segment having functional groups that bind probes. The method of synthesis of such sensors preferably includes use of controlled free radical polymerization techniques, which allows for controlled
architecture polymers to modify the surface of the substrate, and the use of monomers possessing functional groups which do not require activation prior to probe attachment. In this manner functional groups in the polymer chain are

removed from the surface, which allows for solution chemical to be more realistically
reproduced with the benefits of a solid bound probe.

SUPPL. TERM: biosensor polymer brush immobilization polymn functional group; nucleic acid DNA RNA peptide enzyme lipid hormone drug

INDEX TERM: Carboxylic acids, properties
ROLE: PRP (Properties)
(derivs.; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Metals, analysis
ROLE: ANT (Analyte); ANST (Analytical study)
(ions; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Amino group
Animal cell
Biosensors
Genetic markers
Hydrophobicity
Hydroxyl group
Immobilization, molecular or cellular
Microspheres
Molecular association
Molecular recognition
Molecular weight
Reaction kinetics
UV radiation
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Carbohydrates, analysis
Collagens, analysis
Elastins
Enzymes, analysis
Hormones, animal, analysis
Lipids, analysis
Nucleic acids
Peptides, analysis
Phosphates, analysis
Phospholipids, analysis
ROLE: ANT (Analyte); ANST (Analytical study)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Peptide nucleic acids
ROLE: ANT (Analyte); ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: DNA
RNA
ROLE: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Nucleotides, uses
Polymers, uses
cDNA

ROLE: ARG (Analytical reagent use); DEV (Device component use); PRP (Properties); ANST (Analytical study); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Carboxylic acids, properties
Glass, properties
Thiols (organic), properties
ROLE: PRP (Properties)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Polymerization
(radical; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Drugs
(targets; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: Polymers, properties
ROLE: PRP (Properties); REM (Removal or disposal); PROC (Process)
(unbound hydrophobic; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: **106-91-2**, Glycidyl methacrylate **21282-97-3**
29513-26-6, 4,4-Dimethyl-2-vinyl-2-oxazolin-5-one
ROLE: DEV (Device component use); PRP (Properties); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: **38862-24-7P**
ROLE: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: **60799-41-9P 129219-08-5P**
ROLE: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: **258352-22-6P**
ROLE: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: **7440-21-3**, Silicon, properties
ROLE: PRP (Properties)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

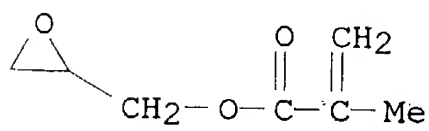
INDEX TERM: **109-83-1 2680-03-7**, N,N-Dimethylacrylamide
ROLE: RCT (Reactant); RACT (Reactant or reagent)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

INDEX TERM: **17225-73-9P 318969-33-4P**
ROLE: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

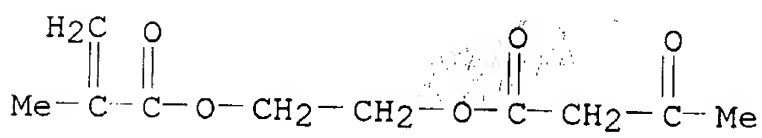
INDEX TERM: **90120-75-5P**
ROLE: SPN (Synthetic preparation); PREP (Preparation)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT **106-91-2**, Glycidyl methacrylate **21282-97-3**
29513-26-6, 4,4-Dimethyl-2-vinyl-2-oxazolin-5-one
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

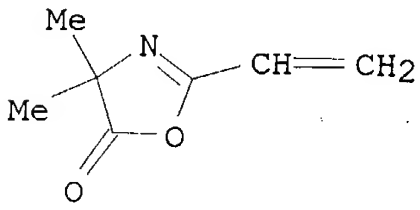
RN 106-91-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, oxiranylmethyl ester (9CI) (CA INDEX NAME)



RN 21282-97-3 HCAPLUS
CN Butanoic acid, 3-oxo-, 2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl ester (9CI) (CA INDEX NAME)

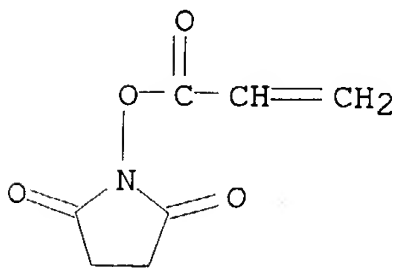


RN 29513-26-6 HCAPLUS
CN 5(4H)-Oxazolone, 2-ethenyl-4,4-dimethyl- (9CI) (CA INDEX NAME)

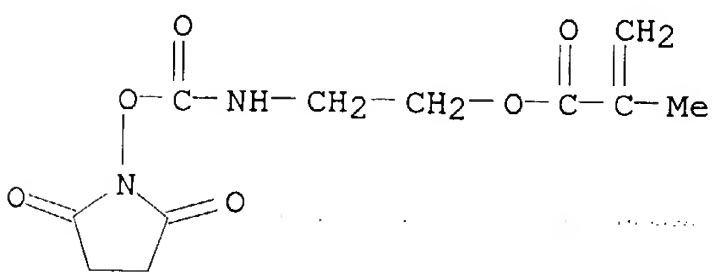


IT **38862-24-7P**
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

RN 38862-24-7 HCAPLUS
CN 2,5-Pyrrolidinedione, 1-[(1-oxo-2-propenyl)oxy]- (9CI) (CA INDEX NAME)



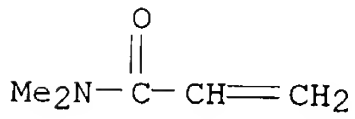
IT **60799-41-9P 129219-08-5P**
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)
RN 60799-41-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-[[[(2,5-dioxo-1-pyrrolidinyl)oxy]carbonyl]amino]ethyl ester (9CI) (CA INDEX NAME)



RN 129219-08-5 HCAPLUS
CN 2-Propenamide, N,N-dimethyl-, polymer with N-(1,1-dimethylethyl)-2-propenamide (9CI) (CA INDEX NAME)

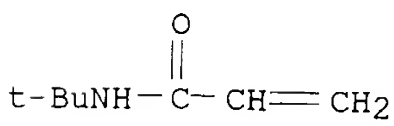
CM 1

CRN 2680-03-7
CMF C5 H9 N O

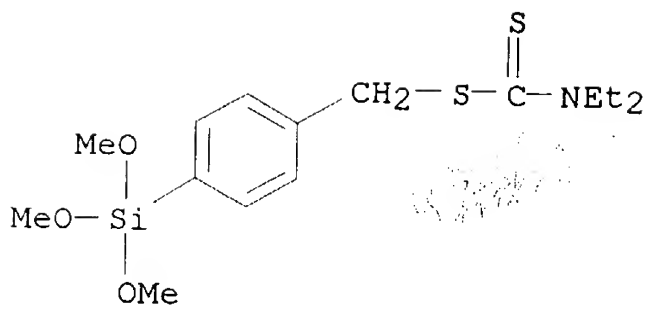


CM 2

CRN 107-58-4
CMF C7 H13 N O



IT **258352-22-6P**
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)
RN 258352-22-6 HCAPLUS
CN Carbamodithioic acid, diethyl-, [4-(trimethoxysilyl)phenyl]methyl ester (9CI) (CA INDEX NAME)



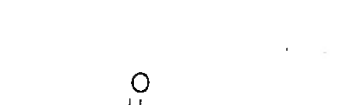
IT **7440-21-3**, Silicon, properties
RL: PRP (Properties)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

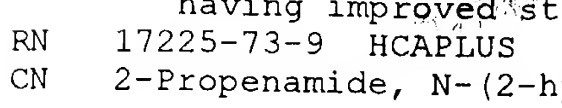
IT **109-83-1 2680-03-7**, N,N-Dimethylacrylamide
RL: RCT (Reactant); RACT (Reactant or reagent)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)
RN 109-83-1 HCAPLUS
CN Ethanol, 2-(methylamino)- (6CI, 8CI, 9CI) (CA INDEX NAME)

HO— CH_2— CH_2— NH— CH_3

RN 2680-03-7 HCAPLUS
CN 2-Propenamide, N,N-dimethyl- (9CI) (CA INDEX NAME)

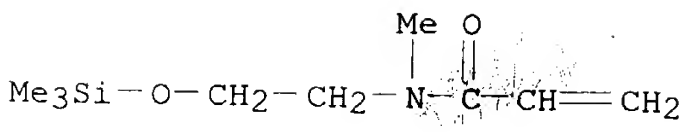


IT **17225-73-9P 318969-33-4P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)
RN 17225-73-9 HCAPLUS
CN 2-Propenamide, N-(2-hydroxyethyl)-N-methyl- (9CI) (CA INDEX NAME)

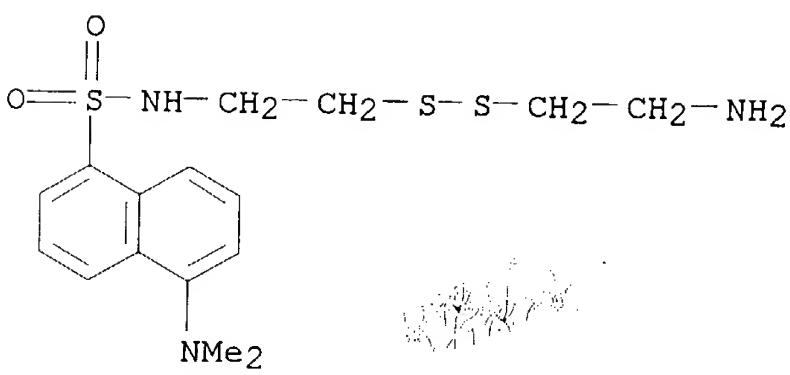


RN 318969-33-4 HCAPLUS
CN 2-Propenamide, N-methyl-N-[2-[(trimethylsilyl)oxy]ethyl]- (9CI) (CA INDEX

NAME)



IT **90120-75-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)
RN 90120-75-5 HCAPLUS
CN 1-Naphthalenesulfonamide, N-[2-[(2-aminoethyl)dithio]ethyl]-5-(dimethylamino)- (9CI) (CA INDEX NAME)



```
=> d que
L48          4822 SEA FILE=WPIX ABB=ON  PLU=ON  BRUSH? AND (SUBSTRATE? OR
                  SILICA? OR GLASS?)
L49        190969 SEA FILE=WPIX ABB=ON  PLU=ON  HYDROPHIL? OR WATER SOL? OR
                  WATER DISP? OR DIMETHYLACRYL? OR ACRYLAMID?
L50           271 SEA FILE=WPIX ABB=ON  PLU=ON  L48 AND L49
L51        140573 SEA FILE=WPIX ABB=ON  PLU=ON  HYDROPHOB? OR STYREN?
L52            64 SEA FILE=WPIX ABB=ON  PLU=ON  L50 AND L51
L53             8 SEA FILE=WPIX ABB=ON  PLU=ON  L52 AND (IMMOBIL? OR BIOLOGICAL
                  MOL? OR BIOCHEMICAL MOL? OR BIOMOL?)
L54             2 SEA FILE=WPIX ABB=ON  PLU=ON  L52 AND PROBE
L55             8 SEA FILE=WPIX ABB=ON  PLU=ON  L53 OR L54


=> d l55 ibib abs 1-8

L55  ANSWER 1 OF 8  WPIX  COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER:      2004-141734 [14]   WPIX
DOC. NO. NON-CPI:      N2004-113065
DOC. NO. CPI:          C2004-056648
TITLE:                 Manufacture of organic thin films by covalently pre-
                       immobilizing derivative of 2,2,6,6-tetramethyl
                       piperidinyloxy based alkoxylamine containing
                       trimethoxysilyl on surface of substrate, and
                       growing grafted polymer layer the substrate.
DERWENT CLASS:         A13 A14 A85 L03 U11
INVENTOR(S):           CHANG, Y C; CHEN, X; LI, J
PATENT ASSIGNEE(S):    (CHAN-I) CHANG Y C; (CHEN-I) CHEN X; (LIJL-I) LI J
COUNTRY COUNT:         1
```

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003219535	A1	20031127	(200414)*		17

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2003219535	A1 Provisional	US 2002-355733P	20020207
		US 2003-360443	20030207

PRIORITY APPLN. INFO: US 2002-355733P 20020207; US 2003-360443 20030207

AN 2004-141734 [14] WPIX

AB US2003219535 A UPAB: 20040226

NOVELTY - Organic thin films are manufactured by:

(i) providing a **substrate** having a surface;

(ii) covalently pre-**immobilizing** a derivative of 2,2,6,6-tetramethyl piperidinyloxy (TEMPO) based alkoxylamine containing trimethoxysilyl on the surface of the **substrate** with the TEMPO group at the free end; and

(iii) growing a grafted polymer layer in vapor phase on the pre-**immobilized** surface by living free radical polymerization.

USE - The method is for forming organic thin films.

ADVANTAGE - The method allows the growth of film to be linearly proportional to its reaction, thus leading to easy and exact control of polymer film thickness from nanometers to submicrons. It polymerizes monomers to allow fabrication of various functional polymer **brushes**.

DESCRIPTION OF DRAWING(S) - The figure is a graph showing the change in thickness and refractive index of the grafted PNIPAAm film with time in water when the temperature is decreased from 50 deg. C to22OC.

Dwg.4/10

L55 ANSWER 2 OF 8 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-096735 [10] WPIX
DOC. NO. NON-CPI: N2004-077033
DOC. NO. CPI: C2004-039920
TITLE: Gradient on a surface for transporting fluid or non-fluid useful for, e.g. **biomolecule** synthesis, has self-assembled monolayer with patterning material defining areas of high and low driving force, and region of diffuse driving force.
DERWENT CLASS: A18 A28 A89 B04 D16 E19 J04 P52 S03 U11 U12 V05
INVENTOR(S): FELDHEIM, D L; FUIERER, R R; GORMAN, C B
PATENT ASSIGNEE(S): (UYNC-N) UNIV NORTH CAROLINA STATE
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003170480	A1	20030911	(200410)*		49

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2003170480	A1 Provisional	US 2002-349906P	20020118
		US 2003-345573	20030116

PRIORITY APPLN. INFO: US 2002-349906P 20020118; US 2003-345573 20030116
AN 2004-096735 [10] WPIX
AB US2003170480 A UPAB: 20040210
NOVELTY - A gradient disposed on a surface for transporting fluid or non-fluid, comprises a self-assembled monolayer comprising a patterning material defining a first region defining an area of high driving force with respect to an interaction with material to be transported, a second region defining an area of low driving force, and a third region defining a region of diffuse driving force, is new.

DETAILED DESCRIPTION - A gradient disposed on a surface adapted to transport a fluid or a non-fluid, comprises a surface, and a self-assembled monolayer (SAM) disposed on the surface comprising a patterning material disposed on the surface so as to define a first region defining an area of high driving force with respect to an interaction with a material to be transported, a second region defining an area of low driving force with respect to an interaction with a material to be transported, and a third region defining a region of diffuse driving force with respect to an interaction with a material to be transported, the third region being contiguous with the first and second regions.

INDEPENDENT CLAIMS are also included for:

(a) making a gradient on a surface, comprising disposing a self-assembled monolayer on a surface, distributing a patterning material in the SAM and defining a gradient on the surface;

(b) a molecular machine for assembling a nanoparticle heterostructure, comprising reservoirs comprising a quantity of nanoparticles, a reaction region, independently openable gate structures in communication with the reservoirs and the reaction region, and dynamic gradient tracks, each in communication with an independently operable gate structure and the reaction region, the dynamic gradient tracks comprising regions of variable driving force;

(c) assembling a one-dimensional nanoparticle heterostructure using the molecular machine, comprising providing nanoparticles on the reservoirs, opening first independently operable gate structure, releasing a first nanoparticle, varying the driving force of a first dynamic track, directing the first nanoparticle down the first dynamic track to the reaction region; closing first independently operable gate structure and opening a second independently operable gate structure, releasing second nanoparticle, varying the driving force of a second dynamic track, directing the second nanoparticle down the second track to the reaction region and closing the second independently operable gate structure, and repeating the steps a desired number of times;

(d) a method of making a particle using the molecular machine, comprising providing a reaction components to the reaction component reservoirs, opening a first independently operable gate structure, releasing a first nanoparticle, varying the driving force of a first static gradient track, directing the first nanoparticle down the first static gradient track to the reactor zone, closing the first independently operable gate structure and opening a second independently operable gate, releasing a second nanoparticle, varying the driving force of a second static gradient track, directing the second nanoparticle down the second static gradient track to the reactor zone and closing the second independently operable gate structure, and repeating the steps a desired number of times; and

(e) a molecular machine for synthesizing a structure, comprising a reservoir comprising a starting material, reaction sites, dynamic gradient tracks, each in communication with reaction sites, the dynamic gradient tracks comprising regions of variable driving force and each reaction site comprising a reaction component, an output track comprising a dynamic gradient track comprising a region of variable driving force and adapted to direct a completed structure away from a reaction site, and an independently operable gate structure in communication with the output track.

USE - Useful in the assembly of a nanoparticle-based structure and in the synthesis of organic compounds and **biomolecules**. The gradient can also be used in the fabrication of electronic components. It can also be used in drug delivery, material science research and applications, and molecular detection and identification applications.

ADVANTAGE - The inventive gradient can be easily formed and does not require highly specialized equipment to generate the structures or compounds that form elements of a gradient.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic diagram depicting the motion of scanning tunneling microscopy tip over a SAM, where the tip is disposed in a solution comprising dodecane and a replacement material.

Dwg.1C/12

L55 ANSWER 3 OF 8 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-011502 [01] WPIX
CROSS REFERENCE: 2003-566973 [53]; 2003-644638 [61]
DOC. NO. NON-CPI: N2004-008489
DOC. NO. CPI: C2004-003210
TITLE: Adsorbent chip for bioassay applications, includes intermediate layer comprising linker arms, and adsorbent film comprising adsorbent particles with binding functionalities bound to the linker arms.
DERWENT CLASS: A18 A26 A89 B04 D16 S03
INVENTOR(S): POHL, C A; PAPANU, S C
PATENT ASSIGNEE(S): (CIPH-N) CIPHERGEN BIOSYSTEMS INC
COUNTRY COUNT: 101
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003079402	A2	20030925	(200401)*	EN	84
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW					
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US 2003032043	A1	20030213	(200353)		39
US 2003017464	A1	20030123	(200361)		38
AU 2002367582	A1	20030929	(200432)		
EP 1483794	A2	20041208	(200480)	EN	
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003079402	A2	WO 2002-US22611	20020716
US 2003032043	A1 CIP of Provisional	US 2001-908518	20010717
		US 2002-383008P	20020523
		US 2002-197115	20020716
US 2003017464	A1	US 2001-908518	20010717
AU 2002367582	A1	AU 2002-367582	20020716
EP 1483794	A2	EP 2002-807074	20020716
		WO 2002-US22611	20020716

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2002367582	A1 Based on	WO 2003079402
EP 1483794	A2 Based on	WO 2003079402

PRIORITY APPLN. INFO: US 2002-197115 20020716; US 2001-908518 20010717; US 2002-383008P 20020523

AN 2004-011502 [01] WPIX
CR 2003-566973 [53]; 2003-644638 [61]
AB WO2003079402 A UPAB: 20040429

NOVELTY - An adsorbent chip comprising a **substrate** including a surface, an intermediate layer attached to the surface and comprising linker arms, and an adsorbent film attached to the intermediate layer, is new. The adsorbent film comprises adsorbent particles bound to the linker arms. Each adsorbent particle comprises a binding functionality.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(a) a method for detecting an analyte comprising contacting the analyte with the inventive chip, and detecting adsorption of the analyte by the adsorbent film; and

(b) a method for making an adsorbent chip, comprising covalently coupling an anchor reagent to a **substrate** surface via complementary reactive groups on the surface and the anchor reagent comprising a locus for polymerization, polymerizing polymerizable monomers to the anchor reagent through the locus where a **brush** polymer is formed, and contacting the **brush** polymer with adsorbent particles comprising binding functionalities.

USE - For bioassay applications.

ADVANTAGE - The chip provides reproducible results from assay to assay, is easy to use, and provides quantitative data in multi-analyte systems. It has minimal variability in selectivity over the entire product lifecycle.

Dwg.0/10

L55 ANSWER 4 OF 8 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 2003-644638 [61] WPIX
CROSS REFERENCE: 2003-566973 [53]; 2004-011502 [01]
DOC. NO. NON-CPI: N2003-512791
DOC. NO. CPI: C2003-176098
TITLE: Novel adsorbent chip useful for detecting analytes e.g., **biomolecules** such as polypeptide, polynucleotide, carbohydrate, or lipid, comprises **substrate**, an intermediate layer having linker arms, and an adsorbent film.
DERWENT CLASS: A18 A26 A89 B04 D16 S03 S05 T01
INVENTOR(S): POHL, C A
PATENT ASSIGNEE(S): (CIPH-N) CIPHERGEN BIOSYSTEMS INC
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003017464	A1	20030123	(200361)*		38

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2003017464	A1	US 2001-908518	20010717

PRIORITY APPLN. INFO: US 2001-908518 20010717
AN 2003-644638 [61] WPIX
CR 2003-566973 [53]; 2004-011502 [01]
AB US2003017464 A UPAB: 20040102
NOVELTY - An adsorbent chip (I) comprising a **substrate** having a surface; an intermediate layer attached to the surface, where the layer comprises linker arms; and an adsorbent film attached to the intermediate

layer, comprising several adsorbent particles bound to the linker arms, where each adsorbent particle comprises a binding functionality, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) making (M1) an adsorbent chip, by covalently coupling an anchor reagent to a **substrate** surface through complementary reactive groups on the surface and the anchor reagent, where the anchor reagent comprises a locus for polymerization, polymerizing several polymerizable monomers to the anchor reagent through the locus, where a **brush** polymer is formed, and contacting the **brush** polymer with several adsorbent particles comprising binding functionalities, thus forming an adsorbent film **immobilized** on the **brush** polymer; and

(2) making (M2) several adsorbent chips, involves providing several chip precursors, each chip precursor comprising a **substrate** having a surface and an intermediate layer attached to the surface, where the intermediate layer comprises linker arms having a charge, contacting each of the chip precursors with an aliquot comprising adsorbent particles having a charge opposite to the charge of the linker arms, where the adsorbent particles comprises binding functionalities, where the adsorbent particles are attached to the intermediate layer, and where the aliquots come from a single batch of adsorbent particles.

USE - (I) is useful for detecting an analyte, by contacting the analyte with (I), and detecting adsorption of the analyte by the adsorbent film. The analyte is detected directly on the chip, by laser desorption/ionization mass spectrometry. The method further involves contacting a sample comprising analytes with the adsorbent film of the chip to allow binding of analytes to the chip, washing unbound analytes from the chip, applying a matrix material to the bound analytes and detecting captured analytes by laser desorption/ionization mass spectrometry, where the analyte is detected by fluorescence (claimed). The analyte is a **biomolecule** such as polypeptide, polynucleotide, a carbohydrate, lipid or an organic molecule such as a drug candidate. (I) is useful in performing chromatographic capture, immunoassays, competitive assays, DNA or RNA binding assays, fluorescence in situ hybridization, protein and nucleic acid profiling assays. (I) is useful preferably in performing retentate chromatography which is useful in biology and medicine, and in sequential extraction of analytes from solution. (I) is also useful in chip-based assays to detect target such as drugs, hormones, enzymes, proteins, antibodies and infectious agents in various biological fluids and tissue samples. Further (I) is useful in screening of compounds such as combinatorial libraries, and for surface-enhanced laser desorption/ionization (SELDI).

ADVANTAGE - (I) is inexpensive and easy to use and provide quantitative data in multi-analyte systems.

Dwg.0/10

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ACCESSION NUMBER: 2003-566973 [53] WPIX
CROSS REFERENCE: 2003-644638 [61]; 2004-011502 [01]
DOC. NO. NON-CPI: N2003-450747
DOC. NO. CPI: C2003-152914
TITLE: Adsorbent chip useful for detecting an analyte such as polypeptide or polynucleotide, comprises a **substrate**, an intermediate layer a linker arms, and an adsorbent film which is attached to the linker arms.
DERWENT CLASS: A89 B04 D16 S03
INVENTOR(S): PAPANU, S C; POHL, C A

PATENT ASSIGNEE(S): (CIPH-N) CIPHERGEN BIOSYSTEMS INC
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003032043	A1	20030213	(200353)*		39

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
US 2003032043	A1	CIP of	US 2001-908518	20010717
		Provisional	US 2002-383008P	20020523
			US 2002-197115	20020716

PRIORITY APPLN. INFO: US 2002-383008P 20020523; US 2001-908518 20010717; US 2002-197115 20020716

AN 2003-566973 [53] WPIX
CR 2003-644638 [61]; 2004-011502 [01]
AB US2003032043 A UPAB: 20040102
NOVELTY - An adsorbent chip (I) comprises, a **substrate**, an intermediate layer attached to the surface, where the intermediate layer comprises linker arms, and an adsorbent film attached to the intermediate layer. The adsorbent film comprises several adsorbent particles bound to the linker arms, and each of the adsorbent particle comprises a binding functionality.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) making (I), by covalently coupling an anchor reagent to a **substrate** surface by complementary reactive groups on the surface and the anchor reagent which comprises a locus for polymerization, polymerizing several polymerizable monomers to the anchor reagent through the locus, where a **brush** polymer is formed, and contacting the **brush** polymer with several adsorbent particles comprising binding functionalities, to form an adsorbent film **immobilized** on the **brush** polymer; and

(2) making several adsorbent chips, by providing several chip precursors, each comprising a **substrate** having a surface and intermediate layer attached to the surface, where the intermediate layer comprises linker arms having a charge, contacting each of the chip precursors with an aliquot comprising adsorbent particles having a charge opposite to the charge of the linker arms, where the adsorbent particles comprise binding functionalities, where the adsorbent particles are attached to the intermediate layer, and where the aliquots come from a single batch of adsorbent particles.

USE - (I) is useful for detecting an analyte (claimed).

(I) is useful for detecting an analyte, preferably a **biomolecule** (such as a polypeptide, polynucleotide, carbohydrate or lipid), or an organic molecule (e.g. drug candidate). (I) is useful in performing assays of substantially any format including chromatographic capture, immunoassays, competitive assays, DNA or RNA binding assays, fluorescence in situ hybridization (FISH), protein and nucleic acid profiling assays, and sandwich assays. (I) is useful for performing retentate chromatography (which has many uses in biology and medicine),

for sequential extraction of analytes from a solution, progressive resolution of analytes in a sample, preparative purification of analyte, making **probes** for specific detection of analytes, identifying proteins, performing enzyme assays, identifying analytes that are differentially expressed between biological sources, identifying ligands for a receptor, drug discovery (e.g. screening assays), and generating agents that specifically bind an analyte. (I) is also useful for performing assays that are useful for confirming the presence or absence of a target in a sample and for quantitating a target in a sample, for screening libraries of compounds, such as combinatorial libraries, or for surface-enhanced laser desorption/ionization (SELDI).

ADVANTAGE - By separating the attachment of the adsorbent film from the synthesis of the adsorbent particles making up the film, the individual processes are more readily controlled. (I) has minimum variability and selectivity over the entire product life cycle. One million adsorbent chips can be prepared from less than 4 l of adsorbent material. (I) increases the sensitivity, specificity and dynamic range of assay systems based upon the capture of a target species with a binding functionality.

DESCRIPTION OF DRAWING(S) - The figure shows a collection of structures of representative anion exchange (positively charged) binding moieties for use in preparing the adsorbent chips.

Dwg.1/10

L55 ANSWER 6 OF 8 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 2003-093068 [08] WPIX
CROSS REFERENCE: 2003-569069 [53]; 2004-340277 [31]
DOC. NO. CPI: C2003-023314
TITLE: Base material, useful for deoxygenating **substrate** compound, comprises polymer **brushes** including one or more functional groups **immobilized** on its surface in several layers.
DERWENT CLASS: B04 D16 J01 J04
INVENTOR(S): LEE, W; SAITO, K
PATENT ASSIGNEE(S): (LEEW-I) LEE W; (SAIT-I) SAITO K; (EMEM-N) EMEMBRANE INC
COUNTRY COUNT: 100
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2002085519	A2	20021031	(200308)*	EN	103
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW					
US 2003068317	A1	20030410	(200327)		
AU 2002338420	A1	20021105	(200433)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002085519	A2	WO 2002-US12174	20020419
US 2003068317	A1 Provisional	US 2001-285146P	20010420

	Provisional	US 2001-339949P	20011210
	Provisional	US 2001-339951P	20011210
	Provisional	US 2002-347547P	20020111
		US 2002-126297	20020419
AU 2002338420	A1	AU 2002-338420	20020419

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2002338420	A1 Based on	WO 2002085519

PRIORITY APPLN. INFO: US 2002-347547P 20020111; US 2001-285146P 20010420; US 2001-339949P 20011210; US 2001-339951P 20011210; US 2002-126297 20020419

AN 2003-093068 [08] WPIX

CR 2003-569069 [53]; 2004-340277 [31]

AB WO 200285519 A UPAB: 20040525

NOVELTY - A base material (I) comprising polymer **brushes** including one or more functional groups **immobilized** on its surface in several layers, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) making (M) the base material, by obtaining a base material, grafting polymer **brushes** to the base material, and **immobilizing** at least one functional group along the surface of the polymer **brushes** in several layers;

(2) conditioning the base material that has polymer **brushes** with anionically and cationically dissociating first functional groups and **hydrophilic** second functional groups **immobilized** on it, by treating the base material with an acid and alkali to extend the polymer **brushes**, respectively, and **immobilizing** in several layers a third functional group to the extended polymer **brushes**; or has polymer **brushes** which comprise anionically dissociating first functional groups, cationically dissociating second functional groups, and **hydrophilic** third functional groups **immobilized** on it, by treating the base material with a acid to modulate the conformation of the polymer **brushes**, **immobilizing** in several layers a fourth functional group to the polymer **brushes**, treating the base material with an alkali to modulate the conformation of the polymer **brushes**, and **immobilizing** in several layers a fifth functional group to the polymer **brushes**; and

(3) a base material comprising polymer **brushes** having one or more functional groups **immobilized** to it manufactured in (1).

USE - Useful for deoxygenating a **substrate** compound, asymmetrically hydrolyzing a **substrate** compound comprising a racemic mixture, and hydrolyzing a **substrate** compound which further comprises a denaturing agent (claimed). Useful as containers for storing or transferring solutions; for resolution of racemic mixtures in a sample solution; and separation, purification, concentration, **immobilization** and synthesis of compounds. Useful in biotechnological, pharmaceutical and chemical applications, in high throughput screens for proteomics and genomics applications, peptide synthesis applications, combinatorial chemistry applications, nucleic acid synthesis applications, in the production of chemical or pharmaceutical

compositions, bioremediation applications, microbiology applications, diagnostic applications, and dialysis or filtration applications.

ADVANTAGE - The novel material effectively separates, purifies, concentrates, **immobilizes**, and synthesizes compounds in a three-dimensional conformation. It is suitable for harsh operating environments i.e. extreme temperatures and pressures, chemical concentrations and electrical changes, more stable at ambient temperatures for prolonged storage periods, and resistant to a broad range of pH values and solvents across a variety of solvent concentrations.

DESCRIPTION OF DRAWING(S) - The drawing shows a preparation scheme for **immobilization** of the enzyme ascorbic acid oxidase onto the grafted polymer **brushes** of a base material comprising a porous hollow fiber membrane.

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ACCESSION NUMBER: 2002-698519 [75] WPIX

DOC. NO. NON-CPI: N2002-550867

DOC. NO. CPI: C2002-197732

TITLE: Sensor, e.g. polymer **brush**, for binding molecule in aqueous sample in assay, comprises polymer chains on **substrate** surface, having **water-soluble** intermediate segment, which contains groups that bind **probe**.

DERWENT CLASS: A14 A28 A89 B04 D16 S03

INVENTOR(S): BENOIT, D; CHARMOT, D; KLAERNER, G; MAZZOLA, L T; NOMULA, S; PIOTTI, M E

PATENT ASSIGNEE(S): (SYMY-N) SYMYX TECHNOLOGIES INC

COUNTRY COUNT: 100

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2002056021	A2	20020718	(200275)*	EN	162
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW					
US 2003108879	A1	20030612	(200340)		
AU 2002246978	A1	20020724	(200427)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002056021	A2	WO 2002-US746	20020110
US 2003108879	A1 Provisional	US 2001-271692P	20010110
		US 2002-43394	20020110
AU 2002246978	A1	AU 2002-246978	20020110

FILING DETAILS:

PATENT NO	KIND	PATENT NO

this application

AU 2002246978 A1 Based on WO 2002056021

PRIORITY APPLN. INFO: US 2001-271692P 20010110; US 2002-43394 20020110

AN 2002-698519 [75] WPIX

AB WO 200256021 A UPAB: 20021120

NOVELTY - Sensor, e.g. a polymer **brush**, comprises:

(a) a **substrate**;

(b) a layer of polymer chains on the **substrate** surface; and

(c) a **probe** for binding a molecule.

The polymer chains have a **water-soluble** intermediate segment between two termini. One terminus is free while the other is bound to the **substrate**. The intermediate segment contains groups that bind the **probe** without chemical treatment.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a method of preparing a polymer **brush**.

USE - For binding a **biological molecule** (claimed) in an aqueous sample in an assay.

ADVANTAGE - The inventive sensor provides increased sensitivity of measurements as well as lower signal to noise ratios, as compared to known surface bound sensors.

DESCRIPTION OF DRAWING(S) - The figure is a schematic drawing illustrating a method of forming a bilayer polymer **brush**, where **hydrophobic** polymer chain segments are attached to the **substrate** surface and **hydrophilic** or **water-soluble** polymer chain segments.

Dwg.9/10

L55 ANSWER 8 OF 8 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 2002-471176 [50] WPIX

DOC. NO. CPI: C2002-133899

TITLE: New organo-phosphoric and -phosphonic acids and salts and known analogs are used for depositing mono- or multi-layer on metal oxide, nitride or carbide or semiconductor, useful for implant, medical equipment or sensor.

DERWENT CLASS: A89 A96 B04 B07 C07 D13 D16 D21 D22 E11 J04 M14 P34

INVENTOR(S): EHRAT, M; HOFER, R; PAWLAK, M; SCHUERMANN-MADER, E; TEXTOR, M; TOSATTI, S; SCHURMANN-MADER, E

PATENT ASSIGNEE(S): (ZEPT-N) ZEPTOSENS AG; (EHRA-I) EHRAT M; (HOFE-I) HOFER R; (PAWL-I) PAWLAK M; (SCHU-I) SCHURMANN-MADER E; (TEXT-I) TEXTOR M; (TOSA-I) TOSATTI S

COUNTRY COUNT: 96

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2002020873	A2	20020314	(200250)*	GE	88
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW					
AU 2001089859	A	20020322	(200251)		
EP 1315968	A2	20030604	(200337)	GE	
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT					

RO SE SI TR
US 2003186914 A1 20031002 (200365)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002020873	A2	WO 2001-EP10077	20010831
AU 2001089859	A	AU 2001-89859	20010831
EP 1315968	A2	EP 2001-969680	20010831
		WO 2001-EP10077	20010831
US 2003186914	A1	WO 2001-EP10077	20010831
		US 2003-363555	20030305

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 2001089859	A	Based on	WO 2002020873
EP 1315968	A2	Based on	WO 2002020873

PRIORITY APPLN. INFO: CH 2000-1732 20000905
AN 2002-471176 [50] WPIX
AB WO 200220873 A UPAB: 20040421
NOVELTY - Alkenyl-, alkynyl-, (het)aryl-, (het)aralkyl- and functionalized alkyl-phosphoric acids (IA) and salts and corresponding phosphonic acids (IB) and salts with specified substituents, including (IA) and (IB) with a functionalized organic group and compounds with ethylene oxide group(s) in place of methylene group(s) in the chain, are new.

DETAILED DESCRIPTION - Organophosphoric acids of formula (IA) and organophosphonic acids of formula (IB) with specified substituents and their salts are new. A biological, biochemical or synthetic marker can be docked to B or Y by an addition or substitution reaction and other chemicals can also be added which provide resistance to protein adsorption and/or cell adhesion.

B = alkyl, alkenyl, alkynyl, aryl, aralkyl, hetaryl or hetarylalkyl (in which methylene (-CH2-) group(s) in the chain can be replaced by ethylene oxide group(s)); and

Y = H or a functional group from OH, carboxy, amino, mono- or di-(lower alkyl)-amino, thiol or a negative acid group from ester, phosphate, phosphonate, sulfate, sulfonate, maleimide, succinimidyl, epoxy or acrylate.

Provided that, when Y-B is alkyl then compounds (IA) or (IB) are excluded.

INDEPENDENT CLAIMS are also included for:

(1) Methods for the deposition of pure mono- or multi-layer(s) of (IA) or (IB) or mixed mono- or multi-layer(s) of (IA) and/or (IB) or local deposition, to give chemically structurized surfaces, of (IA) and/or (IB) layer(s), using a wider range of compounds of formula (IA) or (IB) on **substrate** surfaces of pure or mixed metal oxides, nitrides or carbides or semiconductors by treating the surface, especially of sensor chips, implants and ancillary medical equipment, with **water-soluble** salts of (IA) or (IB);

(2) Implants, ancillary medical equipment and sensor chips coated in this way; and

(3) A method for simultaneous qualitative and/or quantitative determination of a number of analytes by contacting liquid samples of the

analyte(s) with the measuring zone of a sensor chip of this type and measuring the change of signals from this zone.

USE - The process is used for producing implant surfaces with implants of oxide-coated metals, e.g. titanium (Ti), tantalum (Ta), niobium (Nb), alloys, e.g. Ti-aluminum (Al)-vanadium (V), Ti-Al-Nb, Ti-Nb-Zr, Ti-Nb-Zr-Ta, cobalt (Co)-chromium (Cr), Co-Cr-molybdenum (Mo) or iron (Fe)-nickel (Ni)-Cr; and sensor chips (all claimed).

Metal or ceramic implants with a monolayer of (IA) and/or (IB) are used for dental rot implants, artificial prostheses, e.g. hip joint shafts, balls and cups, artificial knee joints, osteosynthesis components, e.g. patellas, screws, external fixers, maxillofacial repair devices, spinal surgery implants, stents and heart pacemaker components (all claimed).

Metal or ceramic medical ancillary equipment with a mono- or multi-layer of (IA) and/or (IB) is used for catheters, balloon catheters, endoscopes and components for external blood circulation systems, e.g. heart machines (all claimed).

The sensors are used in analysis, especially of antibodies or antigens, receptors or ligands, chelators or histidine tag components, oligonucleotides, deoxyribonucleic or ribonucleic acid strands or analogs, enzymes, enzyme cofactors or inhibitors, lectins and carbohydrates, e.g. in natural body fluids (blood, serum, plasma, lymph, urine), egg yolk, cloudy liquids or tissue fluids, surface water, soil or plant extracts, liquors from biological or synthesis processes, biological tissues or cell cultures or extracts; and in quantitative or qualitative analysis of chemical, biochemical or biological analytes in screening processes in pharmaceutical research, combination chemistry, clinical and preclinical development, real-time studies and kinetic parameter determination in affinity screening and research, toxicity studies, gene or protein expression profiles, determination of antibodies, antigens, pathogens or bacteria in pharmaceutical product development and research; and human and veterinary diagnostics, agrochemical product development and research, symptomatic and presymptomatic plant diagnostics, patient stratification in pharmaceutical product development and selection of therapeutic medicament and for detecting pathogens, toxins and irritants, e.g. salmonella, prions, viruses and bacteria, in food and environmental analysis (all claimed).

ADVANTAGE - The process avoids the need to use organic solvents and gives well-defined self assembled monolayer (SAM) layer(s) based on organo-phosphoric and -phosphonic acids (IA) and (IB) and their salts, especially functionalized compounds, including 2 or more different functionalized and/or unfunctionalized compounds, on a series of metal, semiconductor, oxide, carbide and nitride surfaces.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic representation of the ordered structure of alkyl phosphate self assembled monolayers (SAMs) on an oxide surface.

Dwg.1/15